industries have been almost entirely weeded out, and in spite of the raising of the standard in the Government examinations. It is worth noticing that prior to 1891, not more than 20 students attended mining classes, although there are over 150,000 people dependent on this industry. There are now close upon 600 such students. Mr. Hawkridge also points out that in 1891, after the Science and Art Department had been in existence for over 25 years, less than 100 pupils of secondary schools in Derbyshire were receiving instruction in science, which instruction was wholly theoretical in character. There are now 500 pupils under scientific instruction *in properly equipped class-rooms and laboratories*. This is a point the importance of which it is almost impossible to over-estimate. The facts are held to indicate that local authorities, being more intimately in touch with local needs and circumstances than any central body, are better able to develop educational work in the right direction. Mr. Hawkridge hopes, therefore, that so far as secondary and technical education are concerned, future legislation and future administrative changes may tend to place the details of local management more completely and unreservedly in the hands of responsible and representative local authorities.

SCIENTIFIC SERIALS.

IN a continuation of the important paper, in the *Journal of Botany* for January, on Welwitsch's African Freshwater Algæ, W. and G. S. West describe no less than three new genera—*Psephotaxus*, belonging to the Ulotrichaceæ; *Temmogametum*, the type of a new family of Conjugatæ; and *Pyxispora*, belonging to the Zygnemaceæ.

THE number of the *Nuovo Giornale Botanico Italiano* for January contains the commencement of a *Prodromus* of the mosses of Bolivia, by Sig. K. Müller; an account of the ferns and fern-allies collected by Father Giraldi in China, by Sigg. Baroni and Christ; and a description, by Sig. Massolongo, of the galls produced on *Stipa pennata* by *Tarsonemus Canestrinii*.

IN a batch of the *Bulletino* of the Italian Botanical Society, which has just reached us (October 1896 to January 1897), are a very large number of papers of special interest to Italian botanists. In addition, Sig. A. Jatta discusses at length Minks's theory of symbiosis in lichens. While admitting the importance of the facts brought forward by Minks, he does not consider that these militate against the theory of the parasitism of lichens. Prof. L. Macchiati describes the microbe which produces flaccidity in silkworms. Prof. Arcangeli discusses the cause of the presence or absence of the black spots on the leaves of *Arum italicum*, which may be connected with the attraction of insects for the purpose of fertilisation. Prof. Macchiati has a further note on the vexed question of the endosperm in the seeds of *Vicia narbonensis*.

American Journal of Science, February.—Outlines of a natural classification of the Trilobites, by C. E. Beecher. The present state of knowledge of their structure and development is in favour of giving the trilobites the rank of a sub-class, but for purposes of comparison and correlation the fullest results can be brought out by recognising the old and well-known sub-classes, the Entomostraca and Malacostraca. This gives three divisions of Crustacea, and the trilobites agree closely with the theoretical crustacean ancestors of the other sub classes. The author gives a complete diagnosis of the Trilobita, and intends in a subsequent paper to give a classification based upon their ontogeny.—Preliminary trial of an interferential induction balance, by C. Barus. The slender iron cores of two identical helices are placed at right angles to each other in a horizontal plane, and at the same distance from their point of convergence. The distant ends are rigidly fastened, and the fore ends are provided with small plane mirrors. The latter form part of a Michelson refractometer system. Interference fringes may be produced when the apparatus is at rest, or the two mirrors vibrate in an identical manner. They vanish when the plane is displaced. This apparatus is capable of many useful applications to alternating currents and magnetic induction.—The multiple spectra of gases, by J. Trowbridge and T. W. Richards. The difference between the red spectrum of argon obtained with a steady current from a high-potential accumulator and the blue spectrum obtained by means of undamped oscillations has its counterpart in nearly all the other elementary gases. The fluted spectrum of nitrogen is obtained by the steady discharge, and the line spectrum by the condenser. Hydrogen in the former case gives a band spectrum resolvable into sharp lines. Similar differences are observed in the spectra of the halogens. They may, however, be simply due to a change of temperature. Further experiments are being made to decide this point.—Nocturnal protective colourations in animals as developed by natural selection, by A. E. Verrill (will be printed in full).—The Stylinodontia, a sub-order of Eocene Edentates, by O. C. Marsh.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 4.—"The Gaseous Constituents of certain Mineral Substances and Natural Waters." By William Ramsay, F.R.S., and Morris W. Travers, B.Sc.

Helium was found to be present in the gases evolved on heating fergusonite, monazite, samarskite, columbite, and pitchblende.

In malacone (a specimen from Hitterö, collected by one of the authors) both argon and helium were found. This is remarkable as being the only case of a mineral yielding argon. The result was twice confirmed.

The following minerals gave carbon monoxide:—Cinnabar and cryolite.

The following gave a mixture of hydrogen and carbon monoxide:—Apatite; also blue clay from the Kimberley diamond-fields.

The following gave hydrogen alone:—Serpentine, gneiss.

The following gave no gas:—Baryta, celestine, and scapolite.

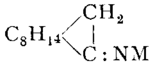
Five meteorites were examined; only hydrogen was evolved. A previously examined specimen gave both argon and helium.

The sulphur wells of of Harrogate and of Strathpeffer gave argon but no helium.

The mineral waters of Cauterets, Pyrenees, gave both argon and helium. The spectra of these samples of gas were carefully examined in the hope of finding evidence of some new substance, but without result. If a new substance is present, it cannot exist in measurable quantity in any of the samples examined.

February 11.—"The Artificial Insemination of Mammals and subsequent possible Fertilisation or Impregnation of their Ova." By Walter Heape, M.A., Trinity College, Cambridge. Received January 15.

Chemical Society, February 4.—Mr. A. G. Vernon Harcourt, President, in the chair.—The following papers were read:—Observations upon the oxidation of nitrogen gas, by Lord Rayleigh. It is doubtful whether Davy's statements respecting the oxidation of dissolved nitrogen in water during electrolysis are correct. A detailed account is given of the apparatus used in oxidising nitrogen by an electric arc; the apparatus causes 21 litres of the mixed gases to combine per hour at an expenditure of 1 horse-power. The influence of pressure upon the oxidation of nitrogen was also studied.—On some apparatus for steam-distillation, by F. E. Matthews.—Researches in the stilbene series, I., by J. J. Sudborough. Small quantities of benzil are formed on heating benzoïn with acetic acid. Deoxybenzoïn is converted into a solid chlorostilbene by phosphorus pentachloride; similarly methyl- and ethyl-deoxybenzoïn yield methyl- and ethyl-chlorostilbene. Diortho-substituted benzoic acids. III. Hydrolysis of substituted benzamides, by J. J. Sudborough, P. G. Jackson, and L. L. Lloyd. In order to determine whether diortho-substituted benzamides exhibit a similar degree of stability towards hydrolysing agents as do the diortho-benzoyl chlorides, a number of substituted benzamides have been examined.—Conversion of campheroxime into methylcamphorimine and camphenylnitramine, by M. O. Forster. The base which the author has obtained by heating camphoroxime with methylic iodide is methylcamphorimine,



$$C_8H_{14}\left\langle\begin{array}{l}CH_2\\ |\\ C:NMe.\end{array}\right.$$

—Note on Wechsler's method for the separation of fatty acids, by A. W. Crossley. The author finds that Wechsler's process for separating fatty acids by partially neutralising and steam distilling the mixture is unsatisfactory.—On the crystalline structure of gold and platinum nuggets and gold ingots, by A. Liversidge. The author suggests, as the result of experiment, that the gold in nuggets has been slowly deposited from solution, the nuggets being more or less rolled masses of gold which have been set free from disintegrated veins.—On the presence of gold in natural saline deposits and marine plants, by A. Liversidge. Rock salt, sylvine, and other similar saline deposits, bittern, seaweed, kelp, oyster-shells, &c., have been examined for gold; the natural salts contained from 1 to 2 grains of gold per ton, whilst kelp and bittern furnished up to 20 grains of gold per ton.

Geological Society, February 3.—Dr. Henry Hicks, F.R.S., President, in the chair.—The subgenera *Petalograptus* and *Cephalograptus*, by Miss G. L. Elles. The forms referred to in the paper are accepted as subgenera of *Diplograptus*, as defined by Lapworth. The two subgenera have frequently been much confused, but examination of specimens preserved in relief shows that they have very distinctive characters, especially at the proximal ends. The author gave diagnoses of the two subgenera, and detailed descriptions of certain forms.—On some superficial deposits in Cutch, by the Rev. J. F. Blake. The author arranges the deposits of which he treats under the following heads: (1) Sub-recent Concrete; (2) Boulder Beds associated with the former; (3) Quartzite Reefs; (4) Infratrappean Grits; (5) Laterite; (6) Alluvium and Rânn. In the discussion which followed, Dr. W. T. Blanford expressed his satisfaction that some of the peculiar formations of Western India had been examined by an English geologist of experience.

Mathematical Society, February 11.—Prof. Elliott, F.R.S., President, in the chair.—Mr. F. S. Macaulay read a paper on a theorem in non-Euclidean geometry. An animated discussion followed, in which the President, Mr. Kempe, F.R.S., Mr. Love, F.R.S., and Lieut.-Colonel Cunningham, R.E., joined with the author.—Mr. Kempe made an impromptu communication on Prof. Sylvester's partition theorem, and the President and Major MacMahon, R.A., F.R.S., also spoke on the subject. The President (Major MacMahon, Vice-President, in the chair) gave a short account of Mr. Segar's theorem, that the product of the differences of n unequal numbers is divisible by the products of the differences of 0, 1, 2, 3, . . . $(n-1)$, and showed, also, that the product of the differences of n unequal square numbers is divisible by the product of the differences of 0^2, 1^2, 2^2. 3^2, . . . $(n-1)^2$.—Lieut.-Colonel Cunningham brought forward some high primes. They were forty-three in number, the highest being 25,621,901, and the lowest 9,170,881.—A paper by Mr. H. M. Taylor, on the degeneration of a cubic curve, was communicated by reading its title.

Zoological Society, February 16.—Prof. George B. Howes in the chair.—Dr. E. C. Stirling, F.R.S., exhibited some bones, casts, and photographs of the large extinct struthious bird from the *Diprotodon*-beds at Lake Callabonna, South Australia, which had been recently discovered and named by him *Genyornis newtoni*, and gave a history of the principal facts connected with its discovery.—Mr. G. E. H. Barrett-Hamilton exhibited a pair of Walrus-tusks from the Pacific, belonging to the species which has been named *Trichechus obesus*, and gave some account of the Cetaceans and Seals of the North Pacific.—Mr. A. Smith Woodward read a description of *Echidnocephalus troscheli*, an extinct fish from the Upper Cretaceous of Westphalia, proving its identity in all essential respects with the existing deep-sea genus *Halosaurus*.—Mr. G. A. Boulenger, F.R.S., read a note on *Acanthocybium solandri*, which recorded the occurrence of this fish in the Arabian Sea. A specimen of it, transmitted by Surgeon Lieut.-Colonel Jayakar, from Muscat, had recently been received by the British Museum, in which the species had been previously represented only by a dried head from the Atlantic.—Mr. W. E. de Winton made some remarks on the distribution of the Giraffe, and gave the synonyms and more definite descriptions of the two existing forms. *Giraffa camelopardalis*, Linn., was fixed for the name of the three-horned northern form, and *G. capensis*, Less., for that of the two-horned southern species.—A communication was read from Dr. Alfred Dugès containing a description of a new Ophidian from Mexico, which was proposed to be named *Oreophis boulengeri*. gen. et sp. nov.—A communication was read from Mr. C. Davies Sherborn, containing a list of the exact dates of the publication of the parts of the natural history portion of Savigny's "Description de l'Egypte."—Mr. F. E. Beddard, F.R.S., read a paper on the anatomy of the Tropic-bird (*Phaëthon*) of the order Steganopodes, amongst which he considered it to occupy a low position near *Fregata*.

Royal Meteorological Society, February 17.—Mr. Edward Mawley, President, read a report on the phenological observations during the past year.—The Hon. Rollo Russell gave the results of some observations on haze and transparency which he had made at Haslemere, in Surrey. From these it appears that the clearest hours, at a good distance from towns, are from about noon to 3 p.m. The clearest winds are from S. to N.W. inclusive, and especially W.S.W., W., and W.N.W.; the haziest are those between N. and E. On bright mornings with a gentle breeze or calm, from autumn to spring, the haze or fog which has lain on the low ground frequently covers the hills in the course of its ascent a few hours after sunrise. At any distance within 100 miles of London, or of the Black Country, observations requiring clear views are likely to be interfered with when the wind blows from their direction, and should, therefore, be taken early.

PARIS.

Academy of Sciences, February 15.—M. A. Chatin in the chair.—The election of M. Sebert in the Section of Mechanics was confirmed by the President of the Republic.—Notice on the life and works of General Favé, by M. Sarrou.—Note on the third part of the "Catalogue of the Paris Observatory," by M. Lœwy.—The age of copper in Chaldea, by M. Berthelot. The analysis of a spear, carrying drawings and inscriptions, and at least 4000 years old, showed that the metal was nearly pure copper, neither tin, lead, arsenic, nor antimony being present in appreciable quantities. The oxidised portion was nearly pure atakamite, $3CuO.CuCl_2 + 4H_2O$. The description of these and similar objects as bronze is thus shown to be erroneous. Copper appears to have preceded bronze in the manufacture of tools.—Studies on the methods of manufacturing wine in the southern regions, by M. A. Muntz. If the temperature during fermentation is allowed to rise to 40° or thereabouts, as will frequently be the case in the southern districts, the yeast is killed, fermentation is stopped, and the conditions are then favourable for the growth of bacteria prejudicial to the wine. At the same time considerable quantities of ammonia salts are produced. These ill-effects can be prevented by artificial cooling with water, in an apparatus nearly identical with that used for cooling beer worts. The most favourable temperature at which to commence cooling is about 34°.—On certain points in the theory of residues of powers. Distinctive characters of numbers or roots from which arise generating residues, by M. de Jonquières.—On the planet Mars, by M. Perrotin. An account of observations on Mars made chiefly during December last, with the large equatorial at the Observatory of Meudon (see p. 401)—Remarks on the preceding note, by M. J. Janssen.—Description of some air barometers, allowing of the measurement of atmospheric pressure with a higher accuracy than with the mercury barometer, by M. V. Ducla. A description of a navigable aerostat, by M. Dheutte.—On operations in general, by M. C. Bourlet.—On a series of primitive groups, isomorphic holohedrically to multiple transitive groups, by M. Ed. Maillet.—On a safe receiver for containing liquefied gases, by M. J. Fournier.—A self-recording apparatus for measuring the movements of the pendulum, by MM. Jean and Louis Lecarme.—Changes of colour in flashes of light of short duration, by M. Aug. Charpentier. For short periods, other things being equal, the less refrangible colours are the first seen. When the intensity diminishes the more refrangible colours predominate, according to the law of Purkinje.—On the influence of the Röntgen rays upon the explosive distance of the electric spark, by M. Guggenheimer. The experiments showed that keeping the sparking distance and potential difference constant, the increase of the explosive distance depends upon the intensity of the Röntgen rays falling upon the spark gap. If the potential and intensity of the rays were kept constant, the increase of the explosive distance depends upon the distance of the spark gap from the emissive wall of the tube.—On the false equilibrium of hydrogen selenide, by M. H. Pelabon.—Action of cuprous oxide upon solutions of silver nitrate, by M. Paul Sabatier. The silver is removed from solution, a greyish deposit being formed, which, upon a careful examination, was found to consist of a mixture of metallic silver and basic copper nitrate.—Action of the oxides of nitrogen upon ferrous chloride and bromide, by M. V. Thomas.—On some derivatives of salicylic aldehyde, by M. Paul Rivals.—On a vegetable lipase extracted from *Penicillium glaucum*, by M. E. Gérard. Cultures of this mould have the property of saponifying monobutyrin, nd hence contain a ferment either identical or closely analogous to the lipase of M. Hanriot. — Influence of diet and starvation on the effects of certain microbial toxines, by MM. J. Teissier and L. Guinard. The effects of the toxines of diphtheria and pneumobacilline are considerably modified by the absence of nourishment. The experiments have not yet been sufficient to warrant general conclusions, but the tendency of those described has been to show that the lesions produced by the toxines are much less severe in the absence of food.—New observations on the Lepidoptera harmful to maize and sugar-cane. The autumn-winter generations of *Sesamia monogrioïdes*, Lefèvre, by M. J. Kunckel d'Herculais.—Morphology of the appendices of the anterior extremity of the middle intestine of the Orthoptera, by M. L. Bordas.—Phenomena of autotomy in *Monandroptera* and *Raphiderus*, by M. Edmond Bordage.—On the Diatoms contained in the calcium phosphate deposits in the south of Tunis, by M. J. Tempère.—Lithological analysis of the sea-bottom in the Bay of Biscay, by M. J. Thoulet.

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 25.

ROYAL SOCIETY, at 4.30.—Note on the Dielectric Constant of Ice and Alcohol at very Low Temperatures: Prof. Dewar, F.R.S., and Prof. Fleming, F.R.S.—On the Relation between Magnetic Stress and Magnetic Deformation in Nickel: Dr. E. T. Jones.—On the Relations between the Cerebellar and other Centres (namely, Cerebral and Spinal), with especial reference to the Action of Antagonistic Muscles (Preliminary Account): Dr. Max Löwenthal and Prof. Horsley, F.R.S.—On the Action of Light on Diastase, and its Biological Significance: Prof J. R. Green, F.R.S.—Fragmentation in *Lineus gesserensis*: A. Brown.

ROYAL INSTITUTION, at 3.—The Problems of Arctic Geology: Dr. J. W. Gregory.

SOCIETY OF ARTS, at 8.—The Mechanical Production of Cold: Prof. James A. Ewing, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electric Interlocking the Block and Mechanical Signals on Railways: Reply of F. T. Hollins to the Discussion.—Relative Size, Weight, and Price of Dynamo-electric Machines: E. Wilson.

SANITARY INSTITUTE, at 8.—Sanitary Laws and Regulations governing the Metropolis: A. Wynter Blyth.

CAMERA CLUB, at 8.15.—Silchester, the Result of Recent Explorations: H. Jones.

FRIDAY, FEBRUARY 26.

ROYAL INSTITUTION, at 9.—Palestine Exploration: Lieut.-Colonel C. R. Conder.

PHYSICAL SOCIETY, at 5.—On the Photography of Ripples: J. H. Vincent.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Rockers and Expansion-Bearings as applied to Girders of Short Span: A. F. Baynham and F. B. H. Dobree.

SATURDAY, FEBRUARY 27.

ROYAL INSTITUTION, at 3.—The Growth of the Mediterranean Route to the East: W Frewen Lord.

ROYAL BOTANIC SOCIETY, at 3.45.—The Desirability of establishing an Institute for Teaching Botany in the Royal Botanic Gardens: W. Martindale.

MONDAY, MARCH 1.

SOCIETY OF ARTS, at 8.—The Industrial Uses of Cellulose: C. F. Cross.

IMPERIAL INSTITUTE, at 8.30.—Ceylon, in Ancient and Modern Times: Henry W. Cave.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—Relation of Colour to Quality in Malt: J. W. Lovibond.—Hehner's Bromine Tests for Oils: J. H. B. Jenkins.—Note on the Analysis of Superphosphates: J. H. Coste.

SANITARY INSTITUTE, at 8.—Nature of Nuisances: Dr. Arthur Newsholme.

VICTORIA INSTITUTE, at 4.30.—Science and Faith: Prof. MacLoskie.

TUESDAY, MARCH 2

ROYAL INSTITUTION, at 3.—Animal Electricity: Prof. A. D. Waller, F.R.S.

SOCIETY OF ARTS, at 8.—Gesso: Matthew Webb.

ZOOLOGICAL SOCIETY, at 8.30.—The Growth of Hair upon the Human Ear, and its Testimony to the Shape, Size, and Position of the Ancestral Organ: H. M. Wallis.—Notes on a Visit to the Bird Islands, Saldahna Bay, South Africa (illustrated with Photographs from Life shown by Lime-light): Gambier Bolton.—On a Collection of Earthworms from South Africa, belonging to the Genus *Acanthodrilus*: F. E. Beddard, F.R.S.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Papers to be further discussed: The Main Drainage of London: J. E. Worth and W. Santo Crimp.—The Purification of the Thames: W. J. Dibdin.

PATHOLOGICAL SOCIETY, at 8.30.

ROYAL VICTORIA HALL, at 8.30.—A Lump of Salt: Prof. Holland Crompton.

WEDNESDAY, MARCH 3.

SOCIETY OF ARTS, at 8.—English Orchards: George Gordon.

ENTOMOLOGICAL SOCIETY, at 8.—The Prothoracic Gland of *Dicranura vinula*: O. H. Latter.

THURSDAY, MARCH 4.

ROYAL SOCIETY, at 4 30.—*Probable* Papers: Experiments on the Absence of Mechanical Connection between Ether and Matter: Prof. Lodge, F.R.S.—Second Report on a Series of Specimens of the Deposits of the Nile Delta. Communicated by desire of the Delta Committee: Prof. Judd, F.R.S.—Luminosity and Photometry: Prof. J. B. Haycraft.

ROYAL INSTITUTION, at 3.—Greek History and Extant Monuments: Prof. Percy Gardner.

SOCIETY OF ARTS, at 8.—The Mechanical Production of Cold: Prof. James A. Ewing, F.R.S.

LINNEAN SOCIETY, at 8.—On a Trichoderma parasitic on *Pellia epiphylla*, Corda: W. G. P. Ellis.—New Species of Perichæta from New Britain, &c.: Dr. W. B. Benham.

CHEMICAL SOCIETY, at 8.

SANITARY INSTITUTE, at 8.—Objects and Methods of Inspection: Dr. J. F. J. Sykes.

CAMERA CLUB, at 8.15. Captain Abney, C.B., F.R.S.

FRIDAY, MARCH 5.

ROYAL INSTITUTION, at 9.—Some Curiosities of Vision: Shelford Bidwell, F.R.S.

GEOLOGISTS' ASSOCIATION, at 8.—Some Properties of Precious Stones: Prof. Henry A. Miers, F.R.S.

SATURDAY, MARCH 6.

ROYAL INSTITUTION, at 3.—Electricity and Electrical Vibrations: Lord Rayleigh.

ESSEX FIELD CLUB, (at Buckhurst Hill), at 7.—The Post-Pliocene Non-Marine Mollusca of Essex; A. S. Kennard and B. B. Woodward.—Variation of Lepidoptera: J. W. Tutt.

BOOKS, PAMPHLET, and SERIALS RECEIVED.

BOOKS.—Life Assurance Explained: W. Schooling (Cassell).—Pheasants, their Natural History and Practical Management: W. B. Tegetmeier, 3rd edition (Cox).—New Thoughts on Current Subjects: Rev. J. A. Dewe (Stock).—Retaining Walls for Earth: Prof. M. A. Howe, 3rd edition (New York, Wiley; London, Chapman).—Principles of Mechanism: Dr. S. W. Robinson (New York, Wiley; London, Chapman).—The Mechanical Engineering of Power Plants: Prof. F. R. Hutton (New York, Wiley; London, Chapman).—Notes on Assaying: Drs. Ricketts and Miller (New York, Wiley; London, Chapman).—The Dawn of Modern Geography: C. R. Beazley (Murray).—Metals, their Properties and Treatment: Prof. A. K. Huntington and W. G. McMillan, new edition (Longmans).

PAMPHLET.—Société d'Encouragement pour l'Industrie Nationale. Annuaire 1897 (Paris).

SERIALS.—Contributions from the U.S. National Herbarium, Vol. v. No. 1 (Washington).—Proceedings of the Physical Society of London, Vol. xv. Part 2 (Taylor).—The Open Court, February (Chicago; London, Watts).—Fresenius' Quantitative Analysis, Vol. ii. Part 4, translated by C. E. Groves (Churchill).—Lloyd's Natural History, Game Birds: W. R. Ogilvie-Grant, Parts 4, 5, 6. Ditto, Monkeys: Dr. H. O. Forbes, Part 6 (Lloyd).—Bulletin de l'Académie Royale des Sciences, &c., de Belgique. 1897, No. 1 (Bruxelles).—Records of the Australian Museum, Vol. iii. No. 1 (Sydney).

CONTENTS.

PAGE

The National Physical Laboratory 385
Röntgen Rays and Constitution of Gases. By E. R. 386
Impressions of Out-door Nature. By L. C. M. . . . 387

Our Book Shelf:—

Ebert: "Guide pour le Soufflage du Verre."—**W. J. S. L.** 388
Vallier: "Projectiles de Campagne de Siège et de Place: Fusées" 388
Lefèvre: "L'Éclairage. Éclairage aux gaz, aux huiles, aux acides, gras, &c." 388
Urbain: "Les Succédanés du Chiffon en Papeterie" 388
Binet: "Alterations of Personality" 389
Edwards: "The Hemiptera-Homoptera of the British Islands" 389
Barnes: "Analytical Keys to the Genera and Species of North American Mosses" 389

Letters to the Editor:—

Dynamical Units.—**Prof. Geo. Fras. Fitzgerald, F.R.S.** 389
The Flight of Gulls in the Wake of Steamers.—**F. W. Headley** 390
Two Unfelt Earthquakes.—**Prof. John Milne, F.R.S.** 390
Foundations of Coral Atolls. (*With Plan.*) **By Rear-Admiral W. J. L. Wharton, C.B., F.R.S.** . 390
Fridtjof Nansen's "Farthest North." (*Illustrated.*) **By Dr. Hugh Robert Mill** 393
The Discovery of another Connecting Link between Flowering and Flowerless Plants. By J. B. F. . 396
Human Incubators (*Illustrated.*) 396
Notes 397

Our Astronomical Column:—

Periodical Comets 401
Observations of Mars at Meudon 401
The Embryology of the Nautilus. (*Illustrated.*) **By Dr. Arthur Willey** 402
Sixty Years of Submarine Telegraphy. By Prof. W. E. Ayrton, F.R.S. 403
The Value of Irrigation Canals in India 404
University and Educational Intelligence 405
Scientific Serials 406
Societies and Academies 406
Diary of Societies 408
Books, Pamphlet, and Serials Received 408